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# Concept of Adjacency

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THESIS

# CONCEPT OF ADJACENCY

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The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Abstract of

CONCEPT OF ADJACENCY

Adjacency, as used in the Law of the Sea, implies a defined area beyond the territorial sea applying to the superadjacent waters, the seabed and the subsoil. It also implies a relationship to the land. This paper is an examination of adjacency as a concept with particular emphasis placed on the possibilities of establishing the outer limits of an adjacent area. The concept of adjacency is addressed from historical, oceanographic, biological, geological and legal perspectives. An investigation into the State practice of projecting limited jurisdiction from shore into the sea by Britain and America is made to determine a possible genesis concerning the adjacency concept. Scientific knowledge gained since the 1958 Conference on the Law of the Sea is examined to see if the concept of adjacency can be identified in scientific terms. Finally, an overview of the legal concept of adjacency from the International Law Commission's work prior to the 1958 Conference is given along with publicist's utterances of the concept. The paper finds that the adjacency concept is valid within certain contexts and invalid in others. In conclusion, it is suggested that only the biological and geological concept of adjacency meet the criteria of defined area and relationship to the land.

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## CHAPTER I

## INTRODUCTION

The Problem. The 1958 Conference on the Law of the Sea finalized four Conventions that codified and developed the Law of the Sea as it had evolved over past centuries. One of the developments that was manifested in the draft and final Conventions was that of adjacency as it applied to waters beyond the claimed territorial sea and to the seabed and subsoil of submarine areas adjacent to the coast but outside the realm of the territorial sea. The following articles resulting from the Conference are illustrative of the context in which the term "adjacent" was (and is) used. Article 1 of the Convention on the Continental Shelf states:

> "For the purposes of these articles, the term 'continental shelf' is used as referring (a) to the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea where the depth of the superadjacent waters admits of the exploitation of the natural resources of the said areas; (b) to the seabed and subsoil of similar areas adjacent to the coasts of islands."[1]

and Article 7 of the Convention on Fishing and Conservation on the Living Resources of the High Seas states:

> "Having regard to the provisions of paragraph 1 of Article 6, any coastal State may, with a view to the maintenance of the productivity of the living resources of the sea, adapt unilateral measures of conservation appropriate to any stock of fish or other marine resources in any area of the high seas adjacent to its territorial sea, provided that negotiations to that effect with the other States concerned have not led to an agreement within six months."[2]

It can be seen from the above that 'adjacent', as used in these contexts, suggests a defined area and a relationship with the land. Hence it would be implied that this area can be visualized as having a beginning and termination. The inner limits of the adjacent seabed and subsoil can come no closer than the outer limits of the territorial sea. At this line of demarcation, there appears to be a boundary, defined by International Law, that permits the exercise of sovereign rights on one side (the territorial sea) and limited jurisdiction on the seaward side (the adjacent seabed and subsoil). The same inner boundary seems to exist for adjacent waters.

Specifically, the coastal State has sovereign rights in the waters of its territorial sea but lesser rights in adjacent waters. However well delimited the inner boundary of the adjacent seabed, subsoil and waters might be defined in law and practice, the coastal State appears to have, at some point beyond the territorial sea, an outer boundary to adjacent areas beyond which even its limited jurisdiction ceases to be recognized. The various conventions resulting from the 1958 Geneva Conference do not define this outer limit of an adjacent area.

While considerable interest has been demonstrated through the years in boundary delimitation of territorial seas, contiguous zones and other special areas, the resolution of these has been somewhat simpler than attempting to establish the outer limits of an area that can be considered adjacent. The problem is stated most succinctly by Henkin:

> "At some point, surely--not far from shore--an area ceases to be adjacent, indeed to have any relation whatever to any coast, and coastal States have no greater rights or interests than any other. Even with guidelines, however, it would be difficult to argue the illegality of leases in any 'adjacent' waters, which might include waters of any depth and even, say, 100 miles from shore."[3]

The problem, then, is to attempt to establish an outer limit and relationship with the land, by some criteria, to an area considered to be adjacent and in this sense develop a concept of adjacency. Indeed, it may be such that the outer limits of an area considered to be adjacent will vary dependent upon factors that dictate different outer boundaries for different interests of the coastal State.

It will be the purpose of this paper to examine the State practice of England and America prior to World War II in extending limited competency from the shore beyond the territorial sea in order to ascertain if there appeared any clear concept of boundaries in the sea beyond which limited jurisdiction was not recognized by these States or others. Investigation may reveal that in practice these States developed a rudimentary concept of the outer limits of adjacency yet not stated as such. Further examination will be made of the validity and feasibility of delimiting the outer boundary of an adjacent area by oceanographic and biological parameters. In addition, the possibility of establishing outer limits of seabed and subsoil areas believed to be adjacent will be considered based on geological information developed since the 1958 Conference. Finally, the legal points of view regarding the outer delimitations of adjacent areas will be viewed.

Referring to the two quoted articles above, in addition to the implied defined area, the coastal State is given limited jurisdiction in this area. The importance of the problem with these outer limits can be seen by following a relatively small number of claims that were triggered by the United States Presidential Proclamation of 28 September, 1945, that states in part:

> "Having concern for the urgency of conserving and prudently utilizing its natural resources, the Government of the United States regards the natural resources of the subsoil and seabed of the continental shelf beneath the high seas but contiguous to the coasts of the United States as appertaining to the United States, subject to its jurisdiction and control. In cases where the continental shelf extends to the shores of another State, or is shared with an adjacent State, the boundary shall be determined by the United States and the State concerned in accordance with equitable principles. The character as high seas of the waters above the continental shelf and the right to their free and unimpeded navigation are in no way thus affected."[4]

Another proclamation issued by the President of the United States the same date states in part:

> "In view of the pressing need for conservation and protection of fishery resources, the Government of the United States of America regards it as proper to establish conservation zones in those areas of the high seas contiguous to the coasts of the United States wherein fishing activities have been or in the future may be developed and maintained on a substantial scale."[5]

Shortly thereafter, the Argentine Government declared, "That the Argentine epicontinental sea and continental shelf are subject to the sovereign power of the nation."[6] Based on the above claims, Chile soon followed with essentially the same claim as Argentina but extended her "protection and control" out to 200 miles from the coast.[7]

Based partly on contiguity the United States had extended limited jurisdiction out to certain areas of the high seas and the continental shelf underlying certain areas of the high seas. While the United States did not define her conservation zones in regard to fishing on the high seas the term "continental shelf" was understood to be a geological entity with recognizable limits. Argentina's declaration was based on that of the United States and Mexico but claimed that the epicontinental sea and "adjacent" continental shelf was subject to the same governmental powers as its land. Chile expanded the claim further out on to the high seas and under them based on the United States, Mexican, and Argentine claims plus the argument that they were "adjacent". It is suggested that the outer limits of an area considered to be adjacent should be defined as precisely as possible in order to preclude the extension further and further to seaward of States' jurisdiction.

In pursuing this problem it is intended to not consider the median line principle mentioned in Article 6(1) of the Continental Shelf Convention nor to examine the adjacency aspects of Article 12 of the Convention on the Territorial Sea and Contiguous Zone. It is considered that the median line principle has been readily accepted by most States and that the limits of the contiguous zone are well understood to be 12 miles. Nor is it the task of the author to examine limited jurisdictions claimed by States beyond the territorial sea in the interest of national security. These are multitudinous and not

particularly related to adjacency per se but rather to meeting a perceived threat that is the result of conflicts limited in time and space.

## CHAPTER II

## HISTORICAL PRACTICE

British Practice. The beginning of the British practice of extending her limited jurisdiction into areas of the high seas is difficult to identify. Perhaps this is the result of incomplete historical records or man's inability early in recorded history to project himself seaward from the land to any significant degree. There are citings in the literature of claims to complete jurisdiction over broad areas of the seas by numerous countries, including England. How effective the results of these declarations were is problematical. Nevertheless, they were an early articulation of man's interest in the sea beyond the shore. They do not seem to reflect any specific concept of nearness except that these declarations generally went seaward from the State issuing the proclamation far across what is now considered to be the high seas.

As a practical point of departure we will consider British practice of projecting limited jurisdiction beyond the limits of national sovereignty into the seas--commencing about 1700. At the end of the 17th century, smuggling of goods in and out of the British Isles began to cause the local authorities considerable concern. In responding to this loss of income, the English Government directed State vessels to cruise the coasts of England and Ireland to prevent smugglers from taking wool out of these countries destined for foreign ports. There was no distance specified in the order but probably none was needed as

Britain at that time claimed exclusive jurisdiction over the four "English Seas".[1] While this claim remained, it is effectively argued by Fulton that actual jurisdiction over the seas at this time was limited to the range of cannon from the land.[2] Hence, the realities of the times are probably reflected in the limited mission given the English cruisers above.

Although smuggling into England had been a concern as early as 1678,[3] the arrival of the 18th century brought far more serious problems for the British in attempting to control smuggling. The first of the "Hovering Acts" was passed in 1709.[4] It is not particularly explicit in its limitations on distance, however. It could be interpreted as applying anywhere "at sea". It is noted that this rule and its further articulations extended de facto jurisdiction beyond the range of cannon for smuggling only, there were numerous caveats as to distance, cargo, packaging of cargo, whether anchored or "hovering" and various combinations of these. Numerous other Acts were legislated during the remainder of the century, some of which claimed specialized competence out as far as 50 miles.[5] Eventually, Britain claimed jurisdiction to control smuggling out to 100 leagues from her coasts in 1805. In demonstrating this latter claim's limited applicability, Masterson states the vessel must have been from foreign parts. It must have on board foreign brandy or other spirits, or tea exceeding six pounds, or tobacco or snuff in any cask containing less than 450 pounds. Meeting any one or combinations of the requirements, the vessel would be seized and forfeited.[6] It is interesting to note that just prior to

this assertion of special competence up to 100 leagues, Fulton states that the judicial decisions were made that introduced the gunshot limit and the three mile limit for the territorial sea into English law.[7]

This may be a significant point in projecting specialized competence on to the high seas in English law. Prior to about 1800, the claims of sovereignty of the sea and limited jurisdiction on the seas to control smuggling appeared to be two different methods of attaining the same end. At times, the limited jurisdiction went beyond the claimed national territory while, at other periods, it did not reach the limits of national territory. But, with the limit of the territorial sea beginning to be fixed at a specific distance by judicial decision and the extension of specialized competence out to 100 leagues from the shore, England began to recognize that, in waters adjacent to her territorial sea, she had limited interests extending to the aforementioned distance. Thus, while not spoken in terms as presently articulated, it is suggested that England considered those waters to be adjacent up to a distance of 100 leagues.

The thoughts of Masterson, although expressed about a period prior to 1805 in Jurisdiction in the Marginal Seas, seem to have a particular relevance.

> "It should be added . . . that all new legislation on this increasingly important subject was designed to reach smuggling on the high seas wherever it was carried on. As the smuggling vessels moved farther out to sea, new legislation went out to meet them . . . . Parliament realized that the law could not remain cast in some mould or frozen within the bounds of a fixed zone, there to remain impotent before the hosts of smugglers who chose to hover just outside this zone."[8]

This suggests that, while at any one time there was a specific outer limit to the customs zone, there was a realization that this outer limit was flexible and subject to change. In this case, the outer limit went as far as necessary to eliminate, or control, the actions of those engaged in smuggling. The distance was determined by necessity.

Smuggling declined dramatically from 1805 on and, in 1876, the Parliament passed the Customs Consolidation Act that formally established the British Territorial Sea at three miles.[9] Since this Act has been quoted by many British publicists from that time forward as an argument against any competence beyond the three mile territorial sea, it is interesting to note that the same Act provided for British jurisdiction out to four leagues from the coast for vessels that break bulk cargo within four leagues of the coast of Great Britain.[10]

Jessup's statement, that up to the twentieth century,

> "All the national claims have been ones of limited or partial jurisdiction or control and none has attempted to incorporate a customs zone as part of the territory save where that zone coincided with the boundary of territorial waters for other purposes."[11]

does not tend to be accurate in fact as demonstrated by the Customs Consolidation Act.

Nor was Great Britain consistent in her denial of others to limited jurisdiction beyond the territorial sea. In the flurry of consultations surrounding Russia's claim to a Maritime Customs Zone, simultaneously rejecting the three mile territorial sea as international law, of 12 miles in 1909, it was realized that Great Britain had never protested the U.S. Customs Zone of 12 miles established in 1799.[12] In fact,

in 1922, by bilateral treaty with the United States, Britain agreed to increasing that distance off-shore to the distance a ship or boat could run in an hour.

It can be seen from the above that Britain claimed, and acquiesced in the claims of others, to limited jurisdiction in waters adjacent to the territorial sea over a period of many years. She perceived a requirement to either control or influence certain events beyond her sovereign territory and waters. In this context, particularly after the early 1800's, in English law there was a definite difference between the waters established as the territorial sea and those next to the territorial sea in which the State retained limited interests and jurisdiction. Yet the breadth of these "adjacent" waters continually changed to protect the interests of the nation. It might be said that the outer limits were as elastic as necessary to provide for the welfare of the country in a specific situation.

American Practice. American practice found its genesis in British law. Thus, early in the life of the Republic, the United States claimed a territorial sea of three miles. Soon after, the Act of March 2, 1799 claimed a customs zone extending from the coast to 12 miles at sea.[13] No further extensions of either competence or distance occurred off U. S. coasts until the Volstead Act of 1919 and subsequent enforcement Acts. The Tariff Act of September 21, 1922, extended U. S. jurisdiction within 12 mile customs zone to any vessel within it and not merely to those proceeding to or departing from U. S. ports.[14] As noted above,

this jurisdiction was extended to the distance a ship or boat could travel in an hour. Eventually, five other nations signed similar bi-lateral treaties with the United States. The United States and Canada signed two treaties concerning the Sockeye Salmon fisheries and the North Pacific Halibut fisheries regulating them on the high seas adjacent to the territorial seas in the 1930's.[16] Although the term "adjacent" does not appear in the two treaties it clearly implies the meaning with the phrases, "The territorial waters and the high seas westward from the western coast of the United States of America and the Dominion of Canada . . . ." in the Sockeye Salmon Fisheries Convention and "in the territorial waters and in the high seas off the western coasts of the United States of America . . . and of Canada . . . ." in the Northern Pacific Halibut Fisheries Convention. Delineation of the respective areas shows these high seas adjacent to the territorial seas of both countries.

The United States has shown little reluctance to project Municipal Law beyond the limits of the territorial sea from the earliest days of the Republic. Perhaps the words of her first Chief Justice, Marshall, provided both the rationale and guidance.

> "But its power to assure itself from injury may certainly be exercised beyond the limits of its territory . . . ; so, too, a nation has a right to prohibit any commerce with its colonies. Any attempt to violate the laws made to protect this right is an injury to itself, which it may prevent, and it has a right to use the means necessary for its prevention. These means do not appear to be limited within any certain boundaries, which remain the same at all times and in all situations. If they are such as unnecessarily to vex and harass foreign lawful commerce, foreign nations will resist their exercise. If they are such as are reasonable and necessary to secure their laws from violation, they will be submitted to."[17]

Conclusions About the Practice of Britain and America. There seems to be little doubt that these two leading maritime powers of the world were competent to extend their jurisdiction beyond a well-defined territorial sea with specific outer limits. But the awaited definity of the territorial sea did not preclude England from projecting certain Municipal Law far to sea even if it might coincide with an already avowed sovereignty over the same area. It would be difficult to ascertain any concept of adjacency under these fluctuating conditions of waxing and waning of claims to sovereignty on the seas.[18] But, with the establishment of the territorial sea, it appears that a rudimentary recognition of interests in the waters adjacent to the territorial sea was considered valid in Britain and America. Adjacent was not a term used in the various acts but seems to be implied rather strongly. There is no evidence that, prior to the territorial sea establishment, this limited jurisdiction did anything other than flow from the coast seaward to a specified (or unspecified) distance without interruption. There were no gaps in the waters where a different, or no, regime existed. The waters were adjacent to the land continuously to whatever limit was established. If none were specified, there seemed to be little concern as to the outer limits. Upon definition of the territorial sea, a modest change occurred, in that, proceeding seaward from the shore, sovereign rights were held by the coastal State to the outer limits of the territorial sea. In the waters adjacent to it, only specific rights and interests were recognized. Generally speaking, 12 miles applied to the outer limits of these areas

although there was some variance. It appears as though there was some concept of adjacency, imperfectly articulated, yet recognizable, in an embryonic form.

## CHAPTER III

## OCEANOGRAPHIC CONCEPT OF ADJACENCY

Statement of the Oceanographic Concept:

> "Peru extended its sovereignty for the purpose of conservation. I should like to reiterate this--and it believes that at the moment this purpose is achieved by the 200 mile belt which corresponds scientifically to the width of the current that determines Peru's particular sea."[1]

Thus, Mr. Letts, Peru's delegate to the Sixth Committee of the General Assembly, explained his country's position in November, 1956, concerning alledged encroachment of freedom of the seas. Disregarding the question of whether Peru has in fact claimed a territorial sea of 200 miles, it appears at this juncture she rested her claim partly on scientific grounds and the width of the Peru (or Humboldt) Current. This is one of the first, if not the first, arguments for limited control and jurisdiction beyond the territorial sea based on a physical phenomenom of the ocean. Whether Mr. Letts realized he was articulating an oceanographic concept of adjacency is subject to speculation. He did, however, pose an interesting contention that merits some degree of investigation.

Currents. Perhaps one of the most distinguishing and measurable aspects of the oceans are their currents. Generated primarily by the wind, they flow in a clockwise direction in the northern hemisphere and a counter-clockwise direction in the southern hemisphere. These rotating motions of the water are known as gyres and their water movements are far

more vast than those produced by the tides.[2] The movement of the water in these currents is also greatly influenced by the continents and their locations. Consequently, abrupt direction changes of the ocean currents, or a splitting of the currents, will occur where these vast waters impinge upon the continental land mass. The location of these currents are relatively close to the land masses of the world and, in some cases, as the Peru Current, they literally lap the shores of adjacent continents during their movement. The only attribute they have in common is their relatively similar major chemical composition.[3]

Prior to examining the oceanographic concept of adjacency, it would be well to review some of the broader physical aspects of the Peru Current. The Peru Current is divided into two components. These are the Peru Coastal Current and the Peru Oceanic Current. The former reaches approximately 100-150 miles offshore, while the latter is accredited with a 500-600 mile extremity as its outer limit.[4] Subsequent reference to the Peru Current herein will mean the Peru Coastal and Oceanic Currents.

The Current begins flowing up the coast of South America about the city of Valparaiso where it is 120 miles wide[5] to about 6°S off Peru, where it leads sharply westward and converges with the South Equatorial Counter Current leading in an easterly direction. Although numerous widths have been attributed to this Current, the popular width is stated in the 200 mile belt. This finger of moving water is located 600-1,000 feet below the surface waters. The upwellings that occur at specific locations in its movements are attributed to the offshore winds that

blow the warmer surface waters westward, allowing the cooler undercurrent to rise in their place. The economic impact of these upwellings have been particularly dramatic in Peru where, in 25 years the country went from a minimal fishing industry to the foremost fishing nation in the world in 1963.[6] The average velocity of the current is about 15 miles per day although this decreases at the westward boundary of the flow.[7] As one of the great ocean currents formed by the gyres in the northern and southern hemispheres, the Peru Current is an excellent point of departure on which to examine the oceanographic concept of adjacency.

Current Velocity. Perhaps the most striking feature of currents is their velocity. Although in many coastal areas, the permanent currents are weak or ill-defined and can be masked by currents produced locally by the wind,[8] this is not true of the Peru Current or some others. As an example, the writer remembers a few years ago having lost power in the Gulf Stream, being set on his ship in a northerly direction at about four knots. In the Peru Current, the drift is relatively strong inshore with some small degree of counter-current activity at the immediate shoreline. As the distance from shore increases, the strength of the current decreases until it is no longer measurable on the Pilot Chart of the South Pacific about 720 nautical miles off-shore. As noted previously, the Peru Current has an average velocity of about 15 miles per day. However, this is not true throughout the length of its run along the coast. At one point in its movement between Arica and Pisco ($13^{\circ}30'S$) the velocity falls below one knot.[9] However, for purposes of

defining its outer boundary it is still measurable and recognizable as part of the Peru Current. At other locations, it reaches as high as two knots.[10] The Peru Current is a definite oceanographic feature in terms of current velocity. It is well defined by velocity measurements throughout its travel in a north-south direction but more importantly in its western boundary. There is a definite line of demarcation at its outer edge.

The same definitiveness is true of most other great ocean currents. Sailing directions published by various governmental agencies around the world attest to the relative ease with which these currents are separated from the rest of the waters of the ocean by velocity measurement. This measurement of the outer edge of the currents flowing close to the riparian states or at a selected intermediate point provides a possible method of delimiting a State's control and jurisdiction in adjacent seas with a defined outer limit. However, there does not appear to be any relationship to the land.

Current Temperature. Another unusual feature of the major currents of the world is that they are generally categorized as cool or warm. This is done, of course, in relation to the water masses that they traverse through. Again, the Peru Current offers a superb model to study in attempting to establish an oceanographic concept of adjacency. Recalling again that it travels at depths of 600-1,000 feet under the surface, it is found that it is a finger of subantarctic water from the eastward moving Antarctic current, a belt of easterly flowing water

around the earth in high southern latitudes.[11] It is unusual to find that the surface waters retain a markedly consistent low temperature throughout their northward movement.[12] This is due primarily to the upwelling that occurs as the waters proceed northward. These waters, unlike some, are not particularly affected by latitude or season.[13] Temperatures range from 39°F at latitude 47°S to 64°F at latitude 18°30'S. This relative uniformity of temperature over approximately 1,800 nautical miles is unusual considering it is in moving toward the equator. However, this is not the most unusual feature of the temperature composition of this powerful Current. A vast amount of data collected in the past 40 years demonstrates that the surface isotherms of the Current generally parallel the coast.[14] In addition, McLellan states that these temperature gradients are particularly sharp off the Peruvian coast.[15]

It is known that, in terms of temperature, oceanic currents are either warmer or colder than the surrounding waters. This indicates that there is a thermal line of demarcation between the current and its surrounding waters. Hence, the outer edge of the current might be rather accurately defined. In the case, as in the Chilean, Ecuadorian and Peruvian claims of limited sovereignty based in part on the width of the Current, then an outer limit to the extent of this jurisdiction possibly can be determined by temperature isotherms. These would have to be seasonally adjusted in some cases and latitude would have an affect. Yet, a relationship with the land is difficult to establish.

Conclusions About the Oceanographic Concept of Adjacency. In examining the Peru Current, two physical properties are singularly apparent. These two, velocity and temperature, are also parameters of the other ocean currents sweeping the littoral, or near littoral, of coastal States. They can be measured and limits to extremities defined. However, seasonal fluctuations in temperature of the atmosphere and variances in current velocities can have an appreciable effect on these measurements. Neither temperature nor current gradients necessarily follow precise lines along a coast. To rely on static conditions in a dynamic natural environment to delimit an area would be precarious. The multitude of change could induce far greater conflicts in the ocean than presently exist. It is therefore suggested that, based on man's present knowledge, it would be unwise to attempt to base the concept of adjacency on known physical parameters of oceanic currents.

## CHAPTER IV

## BIOLOGICAL CONCEPT OF ADJACENCY

Statement of the Biological Concept:

> "We believe that there is a close interdependent relationship between all the living things which constitute the fauna and flora of our coasts and seas. We can observe this vital interdependence throughout the area between our coasts and the outer boundary of the Humboldt Current, a distance of approximately 200 miles. The Humboldt Current constitutes a natural boundary for the various biotic communities living in the adjacent waters, and Chile has a vital interest in protecting them, both as a whole or biological unit and as individual, useful species."[1]

Mr. Lecaros, in defining Chile's position of extending its Maritime Conservation Zone to 200 miles, well articulated a concept of biological adjacency. It is interesting to note that this biological unit was not really completely grasped until about 1940 when Peru attempted to increase its guano production.[2] During this period, scientists at the thriving guano factories of Peru calculated that it was far more profitable to concentrate on producing fishmeal from the abundant anchovetas off Peru's coast than guano from Guanay and Piquero birds inhabiting the Peruvian islands.[3] Hence, further investigation revealed that a model of biological unity existed off the coasts of these countries that is probably one of the most definitive, in biological terms, in the world.

The Model. The biological unit residing in the adjacent waters off Chile, Ecuador, and Peru provided an exceptional model upon which to investigate the concept of biological adjacency. In the final analysis, the source of all food for marine life is microscopic plant life that

obtains sustenance from the nutrient elements of the sea.[4] As will be recalled, the upwelling in the Peru Current brings nutrients to the surface of these waters. In point of fact, there are only four areas of upwelling in the Peru Current. They are all immediately next to the shore. The centers of these areas occur at 29°S, 23°S, 14°S, and 7°S. These are median points about areas that extend up to 150 miles on either side along the coast and about 60 miles to seaward.[5]

The floating phytoplankton, containing chlorophyll, convert carbon dioxide and water into organic matter in the presence of light and nutrient salts. The resulting plants, mostly algae, are then consumed by zooplankton, some fishes, and herbivores animals. These herbivores animals are eaten further by others (carnivores) more advanced in the life cycle. The advanced carnivores also eat the fishes, primarily anchovetas. Any of the organisms that die before being eaten sink to the bottom where they are eaten by bottom worms and crabs. Carnivorous excreta also settles to the bottom. This natural death and excreta depositing, aided by bacteriological processes, returns phosphate, nitrate and other nutrient salts to the waters in a soluble inorganic form to await transport to the surface with the cool waters of the Peru Current.[6] Replenishment nutrients are also supplied by rivers emptying into the oceans. These nutrients, phosphate, nitrate and silicate, are essential to sustaining life in the ocean. It is noteworthy that a number of major rivers of South America empty into the previously described areas of upwelling. At the southern most area of upwelling, five major rivers discharge into the turbulence. At the area centered

about 23°S, two major and numerous smaller rivers empty into the upwelling. About 14°S, four major rivers and a number of lesser ones discharge into the rich waters. Around 7°S, a multitude of major rivers empty into the highly productive waters. Nutrients added from the land greatly enhance the lucrative areas of upwelling that lie off the coasts of Chile, Ecuador, and Peru. Thus, an enclosed biological entity exists that is quite self-sustaining. This eco-system depends upon the coolness of the waters of the Peru Current, its upwelling, and, to a substantial degree, upon nutrients from the land.

The Case for the Concept of Biological Adjacency. A number of publicists and speakers have recognized that, there are definite biological entities in the oceans. Strickland, in Chemical Oceanography, has said that as a "broad generalization" productivity in the ocean is greater near the shores of islands and continents than in the open ocean.[7] And the transitional phase between coastal and oceanic crop levels appears to be roughly at the edge of the continental shelf.[8] However, he further states it is not too certain that this holds true when there is little or no continental shelf (as with Chile, Ecuador, and Peru).[9] Continuing on, he states that a true oceanic area is at least 100 miles from the nearest part of the continental shelf.[10] Returning to the Peru Current, Lermond states that the abundance of marine life is its most extraordinary feature.[11] He also correlates the changes in fish and marine invertebrates with changes in temperature and chemical content of the sea water.[12]

At the Conferences on the Law of the Sea in 1958 and 1960, there seemed to be clear recognition of the biological unit and its delicate balance off the coasts. Castaneda, Mexico's representative to the Third Committee at the first Conference, exhorted the delegates to take into account the morphological and functional structures of the various biological communities in the oceans. He further stated this may cover an entire maritime area that cannot be artificially delimited by man.[13] Escudero, of Ecuador, remarked that Chile, Ecuador, and Peru established the 200 mile maritime zone out of "overriding biological circumstances" off their coastlines.[14] Mallin, of Ireland, thought that the draft articles 51 through 56, International Law Commission for the Law of the Sea Conference to be held in 1958, all had a biological base.[15] This continuous reference to the biological aspects of conservation and fisheries next to the coastal State was reflected by many speakers at the 1958 Conference. In addition, it was referred to constantly at the ill-fated 1960 Conference.

Conclusions About the Concept of Biological Adjacency. The vast amount of knowledge gained in recent years concerning marine flora and fauna has enabled eco-systems to be identified relatively close to the shores of islands and continents. Using the eco-system existing in the Peru Current, it has been demonstrated that a definitive and delimited area exists that transcends what most States claim as their territorial sea. This unit is dynamic, delicate, and interdependent on the fauna and flora within it. In tracing the life cycle existing in the four

areas of the Peru Current, it can be seen that there is a dependence upon the land for a replenishment of nutrients. These nutrients, particularly phosphate, are provided by the rivers flowing into the upwelling areas next to the coasts. Since productivity of the ecosystem is sustained by a continuous renewal of essential ingredients, among them nutrients, to stop or appreciably alter any input into the system could have disasterous consequences. Thus, the river furnished nutrients, a result of a biochemical cycle on land, tie the land to the adjacent waters.

## CHAPTER V

## GEOLOGICAL CONCEPT OF ADJACENCY

The Continental Shelf. Article 1 of the Convention on the Continental Shelf is quoted again for convenience.

> "For purposes of these articles, the term 'continental shelf' is used as referring (a) to the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 metres or, beyond that limit, to where the depth of the superadjacent waters admits of the exploitation of the natural resources of the said areas; (b) to the seabed and subsoil of similar areas adjacent to the coasts of islands."[1]

However, the International Committee on the Nomenclature of Ocean Bottom Features defines it as:

> "The zone around the continent, extending from the low-water line to the depth at which there is a marked increase of slope to greater depth. Where this occurs, the term shelf edge is appropriate. Conventionally, its edge is taken at 100 fathoms, or 200 meters, but instances are known where the increase of slope occurs at more than 200 or less than 65 fathoms. When the zone below the low-water line is highly irregular, and includes depths well in excess of those typical of continental shelves, the term continental borderland is appropriate."[2]

It can be seen that there is a basic conflict in the concept of the continental shelf in Law and Geology. Both the Convention and Committee on Nomenclature generally agree that out to 200 metres (or meters) the seabed and subsoil comprise the continental shelf. But, beyond that, in Law, the term "continental shelf" depends only on the ability of the seabed and subsoil to be exploited and not on any criteria of depth, distance, or geological parameter. Within this context, it would be somewhat difficult to reject a claim to jurisdiction over an adjacent

area a very few miles offshore, say 20 miles, that actually was on the deep floor of the ocean. This is a situation that could occur off the west coast of the Continental United States where the geological continental shelf averages 10 miles in width. Fortunately, or unfortunately, interesting new information has come to light since the 1958 Conference on the Law of the Sea that has altered previous thoughts on the shelf. In examining this information, two rather well developed theories will be discussed. The first is new, yet strongly supports the second. There will also be a scrutiny of information concerning sediments of the Continental Shelf. We shall initially discuss sea-floor spreading and then continental drift. Hopefully, Mouton's plea that, "Law demands clear concepts and easily discernible limits"[3] will be fulfilled.

Sea-Floor Spreading. One of the most interesting developments in recent geological research has been the rather solid theory of sea-floor spreading. It is considered pertinent to consider this phenomenon as it appears to have a direct relationship to the geological concept of adjacency. In the past two decades, considerable evidence has been accumulated to suggest that the bottom of the ocean is a dynamic source of the geological structuring of the world. First, geologists discovered that, throughout the oceans of the world, there was a continuous system of mid-ocean ridges. They also were aware that the sea floor was quite young in geological time--no bottom rock samples have been found over 135 million years old while some area of the land masses are 2 to 3

billion years old. Sediment samplings of the floor confirmed this. The rate sediment accumulated did not correlate with the age of the earth ($4.5 \times 10^9$ years). In fact, it was found that the sediments asymmetrically surrounding the ridges showed greater thickness (hence age) away from the ridges. This tended to indicate the ocean floor was newer near the mid-ocean ridges. About 1960, Hess, of Princeton University, suggested the ocean floors might be in motion.[4] Around the same time, it was found that the ocean bottom had long striped magnetic anomalies (high and low magnetic readings) oriented about the ridges.[5] Furthermore, like ranks of troops, the stripes were immediately adjacent to each-other as they were found proceeding away from the ridges. It was hypothesized that, when molten rock, being expelled from the ridge, reached the surface it became magnetized in accordance with the earth's polar orientation (north-south or south-north) and proceeded away from the ridge. Employing a computer and a wealth of accumulated data from all over the world, it was established that the same sequence of patterns extended away from the ridges in the South Pacific, South Atlantic and Indian Oceans.[6] This tended to confirm the hypothesis that the seafloor is spreading. In addition to the above, considerable other evidence exists to suggest that this theory is correct.[7] However, if the seafloor is spreading, then the continents are also probably being moved.

Continental Drift. The possibility of continental drift has been mentioned in literature since 1620.[8] About the same time as Heirztler and others were developing the seafloor spreading theory, the continental

drift theory was being rejuvenated. New and strong evidence suggested that, in the northern hemisphere, there was one massive continent. In the southern hemisphere, there was another.[9] The evidence being accumulated in the 1960's began to obtain overwhelming proportions in favor of continental drift. Flora fossils on both sides of the South Atlantic were found to be identical (and this could not happen if the distance between them existed as it does today, for only a few miles can substantially change their basic characteristics.) Perhaps the most visible proof was the fitting together of the continents on both sides of the Atlantic at the central depth of the continental slope. The fit was near perfect with less than a 1% error. Subsequent investigation showed that common ores existed on both sides of the Atlantic in their predicted location. Fractures in the ocean floor left traces pointing to the direction that the continents took to their present locations. The evidence took on unusual credence and was entirely compatible with the theory of sea-floor spreading.[10] In addition, Wilson's previous work that, theoretically, matched the huge fault through Scotland's Caledonian Mountains with the Cabot Fault that extends from Boston to Northern Newfoundland was essentially confirmed.[11] Wilson's work also showed that these faults pre-dated the mid-Atlantic Ridge where the initial rupture occurred.[14]

Throughout the world, there now exists considerable knowledge to essentially prove the existence of two massive continents about 160 million years ago. Based on magnetic anomalies, paleomagnetic, geological and paleonthology data, it is strongly supportive of the

theory that a continental break-up did occur with the mid-ocean ridges marking the rupture line. The continents (and what we term the continental shelf) then would have started to move quite slowly over the face of the earth. Except for three islands,[13] there are no existing facts that can show that any part of the continents, either now submerged or exposed, have become separated from the original land entities that formed with the original rupture. If accepted, and it generally has been, then continental shelves have always been connected to the continents throughout geological time.

Composition of the Continental Shelf. It is interesting to note that about the time of the Hague Conference on Codification of International Law (where the Law of the Sea was being considered) American college students were being inculcated, to some degree at least, with the thought that the principle distinguishing feature of the ocean bottom was its "montony", "planeness" with "declines" into the ocean depths.[14] At this point in history, very few people even realized there was a continental shelf much less of what its composition consisted. World War II added greatly to the knowledge of the ocean bottom, its configuration and sediments. It is probable that President Truman's declaration in September, 1945, was based on far more extensive knowledge than that of 1930. By 1955, it was well recognized that the densities of the continental blocks (of which the Continental Shelf is integral) and those of the oceans bottom crust were substantially different.[15] It was also recognized that two different source sediments

were present on the shelves, and this was satisfactorily explained by both glacial silting and silting actions from the land.[16]

At the present time, the continental shelves throughout the world are broadly categorized as those that are sedimentary and those that consist of igneous or metamorphic rock.[17] The large majority of these shelves are sedimentary,[18] and bear a definite relationship to the land. The purely sedimentary shelf has been formed, in significant part, by the flow of land sediments seaward. At times, the sediment merely flows under influence of liquid dynamics and little inhibiting action is found to impede it as it flows out into the ocean. At other times giant fault blocks lying off-shore stop the sediments and create a pooling effect that contains the sediments. In the case of crystalline rock shelves overlain with sediments, the same processes can occur. Here, there is a dual relationship to the exposed continent. The crystalline rock is like that of the visible land and a significant portion of the sediments come from the land. Where the igneous/metamorphic rock is the predominate feature of the shelf, it is also found to be of a similar density to that of the land.[19]

Investigation of continental shelf sediment has revealed a number of facts. Oyster and other mollusk shells have been found in depths up to 130 meters off the East Coast.[20] These can only live in shallow water. Emory states that the average depth at the edge of the continental shelf for leeward continents (U.S. East Coast) occurs at 133 meters (72 fathoms).[21] Correlating this with the last great glacial movement, 15,000 years ago, that lowered the sea level approximately

130 meters[22] from its present depth, it is realized that the continental shelf of the U.S. East Coast was almost completely exposed. Even further dramatic proof of this has been provided in the large number of shells found at the outer edge of the shelf, the fresh-water peat submerged in the ocean, evidence of boreal spruce and pine on the shelf, the teeth of mammoths and masotoas along with the bones of musk ox, giant moose horse, tapir and giant ground sloth.[23] Does it take a considerable imagination to visualize clovis man, whose culture in North America dates back at least 12,000 years, living on the present continental shelf, particularly when numerous other present day flora and fauna existed out to the edge of the shelf?

Conclusions Concerning the Geological Concept of Adjacency. New information, techniques, and instruments have shed considerable light on the subject of the continental shelf. Scientists have come to believe that, about 160 million years ago, the continents began splitting up. As they did, the present-day land masses (plus our continental shelves) began to move away from each other as a geological entity. About 15,000 years ago, a large portion of the U.S. east coast continental shelf was exposed as the present-day land is. It supported life in abundance in the form that would be recognizable today. It is not improbable that man, himself, lived on the shelf, supporting life from the living resources of both the fauna and flora. As the glaciers melted in the intervening years, man continually retrenched to his present land/sea boundaries--to await again the opportunity to live on

the shelf. In addition, the present land mass provides a rich source of sediments that overlay the shelf. This flow has been continuous across the entire shelf in many instances. In all, it has provided a conti-minium from land to submerged land.

The continental shelf appears to be ever more directly linked to the present-day land masses. Throughout geological time, there has been a continuous relationship in nearness and life to the present land masses. It seems natural to consider them an integral part of the continents. It is also thought that they provide an excellent criteria for adjacency--one that supplies definite boundaries of a logical nature.

## CHAPTER VI

## LEGAL CONCEPT OF ADJACENCY

International Law Commission Background. The deliberations of the International Law Commission over the years preceding the 1958 Convention provide an interesting insight into the legal concept of adjacency. The earliest expression of "adjacency" was found in the word contiguous. In the Draft Articles on the Continental Shelf in 1951, the Commission recommended that Article 1 read:

> "As here used, the term 'continental shelf' refers to the sea-bed and subsoil of the submarine areas contiguous to the coast, but outside the area of territorial waters, where the depth of the superadjacent waters admits of the exploitation of the natural resources of the sea-bed and subsoil."[1]

and in the Related Subjects Article 3 states:

> "The regulation of sedentary fisheries may be undertaken by a State in areas of the high seas contiguous to its territorial waters, where such fisheries have long been maintained and conducted by nationals of that State, provided that non-nationals are permitted to participate in the fishing activities on an equal footing with nationals. Such regulation will, however, not affect the general status of the areas of the high seas."[2]

This latter article poses the question of whether the waters would be contiguous if the coastal State had not long maintained a fishery. A subsidiary question concerns the number of years a fishery must be conducted to the "long".

In the deliberations of the International Law Commission in 1953, Lauterpacht opined that there was a distinct difference between coastal contiguity and a contiguous zone,[3] in regard to the continental shelf.

This lead the Secretary to the Commission to remark that he would suggest using "adjacent" vice "contiguous".[4] There also seemed to be agreement that, if a continental shelf was interrupted by a wide canyon, etc. with a depth of greater than 200 metres, there would be a question of contiguity.[5] Eventually the Commission proposed that Article 1 regarding the Continental Shelf should read:

> "As used in these articles, the term 'continental shelf' refers to the seabed and subsoil of the submarine areas contiguous to the coast, but outside the area of the territorial sea, to a depth of two hundred metres."[6]

In regard to fisheries, the Commission proposed the following article:

> "In any area situated within one hundred miles from the territorial sea, the coastal State or States are entitled to take part on an equal footing in any system of regulation, even though their nationals do not carry on fishing in the area."[7]

In the proposed Article 1 on the continental shelf, the concept of adjacency was rather clearly defined. The shelf must be contiguous to the coast, but outside the territorial sea area. However, contiguity stopped at a depth of two hundred meters. Beyond that, say at 210 meters depth, the shelf was no longer contiguous or adjacent. In the case of fisheries, adjacency or contiguity was not apparently relevant. The Article seems to permit some competence in non-adjacent areas so long as they are within 100 miles of the coastal State's territorial sea. As an example, a country could enter any system of regulation between 60-75 miles of its territorial sea. However, it might not have any competence between the outer limits of its territorial sea at, say 12 miles, and the beginning of the fisheries zone. This would leave a

gap of 48 miles on the high seas in which the coastal State had no special competence or rights. The inconsistency of the International Law Commission in regard to contiguity is apparent. In the shelf article discussion, there was some concern over a canyon rendering the outer part non-contiguous. In the fisheries article, non-adjacency appeared to be blessed.

In the deliberations of 1956, the subject of adjacency was considerably enlivened. In opening the discussion on Article 1, the United Kingdom proposed that, in the previously adopted article, the word "immediately" be inserted before the word "contiguous". However, this point was never realized as the present Article 1 was introduced by the Chairman. In the ensuing discussion of the use of "submarine areas" vice "continental shelf", the Chairman made the point that:

> " . . . the words 'adjacent to the coastal State' in his proposal placed a very clear limitation on the submarine areas covered by the article. The adjacent areas ended at the point where the slope down to the ocean bed began, which was not more than 25 miles from the coast."[8]

Mr. Francois, the Special Rapporteur, soon stated that there "must be a contiguity between the mainland and the continental shelf."[9] After reiterating that a broad channel could preclude the outer area of a continental shelf from being adjacent, the Yearbook attributes the following generality to Mr. Francois:

> "However, by including in the definition the concept of 'adjacency', it could not be the intention to establish a horizontal instead of a vertical limit for the submarine areas--an entirely new idea completely foreign to those previously adopted by the Commission."[10]

This is a clear elucidation of the criteria that "adjacency" be measured by an outer limit, not in distance from the coast or territorial sea extremity, but on the basis of a depth. A number of previous statements in both the 1953 and 1956 Commission discussions had alluded to an outer limit based on distance. Apparently, there was a diverse opinion held on whether the outer limits should be determined in one manner or the other. Another element appeared in the concept of adjacency--that of delimitation by a vertical parameter.

In the discussions of the conservation of the living resources of the high seas, adjacency again came under considerable scrutiny. Of particular note, was the Special Rapporteur's concern that the coastal State would gain unilateral powers over very wide areas of the high seas with the deletion of the 100 mile limitation of the 1953 Article.[11] The previously defined outer limit was abolished leading once again to a reluctance to establish an outer limit to the high seas adjacent to the territorial sea. Whether this was due to lack of specialized competence in a technical sense is difficult to determine from the swirl of conversations and remarks reported in the Yearbook. Up to the meeting of 31 May 1956, the Committee continued to employ the term "contiguous" in proposed articles and amendments thereto. However, on that date, in order to not confuse contiguity with the contiguous zone adjacent to the territorial sea, the Drafting Committee was instructed to utilize a different term.

It seems that Commission members drafting articles for the 1958 Convention recognized the need for coastal State competence over

submarine areas adjacent to those underlying the territorial sea. They recognized that, at some point, the area was non-adjacent and therefore not subject to that jurisdiction. Only in the 1953 meetings was a definite limit put on the extent of an adjacent submarine area. The draft Article 1 on the Continental Shelf in 1951 and 1956 gave no definition of the extent to which a submarine area was adjacent. This lack of definition was also apparent in the fisheries deliberations. Again, it was only in 1953 that a limit of contiguity was established. It is the writer's opinion that, like Topsy, adjacency "just growed" during the Commissions' deliberations prior to the 1958 Convention.

Other Expressions of Adjacency. Literature contains very little concerning the concept of adjacency since the Convention in 1958. However, there are some interesting thoughts that arose in years prior to the Convention. One such was by Judge Morton in speaking of the seizure of The Grace and Ruby:

> "The line between territorial waters and the high seas is not like the boundary between us and a foreign power. There must be, it seems to me, a certain width of debatable waters adjacent to our coasts. How far our authority shall be extended into them . . . is a matter for the political departments of the Government rather than for the courts to determine."[12]

Hence, in the early 1920's, Judge Morton recognized there were waters beyond the territorial sea, yet adjacent to the coast, whose outer limits were to be determined by the political departments of Government. It seems that, if this thought on adjacency endured, chaos on the oceans might result. A number of questions immediately are summoned to mind.

Can different departments of a government extend jurisdiction at differing distances into waters adjacent to the coast? What is a political department of government? If the government changes, are the limits of adjacency subject to change? Contrary to Judge Morton, the opinion is ventured that only through a legal interpretation can the concept of adjacency be solidified--particularly the outer limits.

An interesting definition in the years after the Convention was this statement by McDougal and Burke:

> "By ocean areas adjacent to the territorial sea, we mean those which bear some geological relationship of proximity to the coastal State. This notion of contiguity must be understood, however, in the light of the variable factors of space, time, and contemporary technology. It is obvious that, under contemporary technological conditions, the effects of events may be projected over such distances that contiguous area may be regarded as embracing locales that hitherto have seemed far removed from the coastal State. We emphasize, therefore, that the important characteristic of the ocean areas is that the activities therein are realistically perceived to have a unique impact upon the social processes of a particular coastal State."[13]

In this statement, a plethora of criteria emerge as needing to be fulfilled before an ocean area is adjacent. There must be <u>some</u> geological relationship of proximity. However, this is caveated with certain understandings of <u>variable</u> factors. But the important characteristic is that the activities in the area are <u>realistically perceived</u> to have a <u>unique impact</u> on <u>social processes</u>. The range of interpretations that could be given to these determinants staggers the imagination. But there is one significant attribute of the above. It illustrates the difficulty even the finest legal minds have in articulating a concept of adjacency.

In speaking of Article 1 of the Continental Shelf Convention, Bowett says:

> "In general, community policy dictated the desireability of exclusive control for the coastal State over adjacent (italics) areas, then, provided the exploitation is technically and economically feasible, there seems no reason to impose any arbitrary limit. The fears that such a fluid test of limit as the 'exploitability' test would lead to extravagant claims can be countered by the arguments that the areas must still be adjacent (italics)."[14]

Again, the difficulty can be seen in treating the subject of adjacency. In this case, the outer limits of exploitation of the shelf are bounded by the adjacency criteria--which has, as has been seen, no outer boundary. The argument can be reversed to say that the limits of adjacency are determined by the limits of exploitation. This also is quite futile over the long run.

The Commission on Marine Science, Engineering, and Resources did a rather extensive investigation into the criteria for adjacency. The comprehensiveness of this and related subjects will not be discussed here. However, on the basis of this study, a recommendation was made to create intermediate zones terminating at the 2,500 meter isobath or 100 miles off shore (whichever was most beneficial) reasoning that this would finally establish definite limits that corresponded to most of the world's continental shelves and slopes.[15] Unfortunately, the responsible panel did not apply any criteria to adjacent waters. The recommended 2,500 meter/100 mile limit seems plausible in most respects. Foremost, it would resolve the ambiguities now existing in the term "adjacent" in regard to the continental shelf. It would provide clear and specific

limits to adjacent submarine areas that would be recognizable in law and take into account most geological shelves and slopes. It would also encourage the entrepeneur to continue development of techniques to exploit the shelf and slope. In addition, it would mark the outer boundary of any international body's jurisdiction over the resources of the deep sea-bed.

Conclusions Concerning the Legal Concept of Adjacency. There seems to be substantial evidence that there is a legal idea of adjacency. It is thought that this evolved over a period of years and crystallized toward the end of the International Law Commission deliberations prior to the 1958 Convention. Adjacency, in regard to the continental shelf, appears to have predated that of the waters of the high seas. Additionally, it is suggested that the former is more definitive than the latter in the minds of jurists. However, this adjacency is far from static. There seems to be a multitude of criteria that can be applied to ensure that an area is adjacent. Yet, once that criteria is met, other considerations can be imposed that negate the first. There doesn't really appear to be a concise way of expressing it. The writer is of the opinion that, in the legal sense, adjacency is a notion rather than a concept.

## CHAPTER VII

## CONCLUSIONS CONCERNING THE CONCEPT OF ADJACENCY

Conclusions. Adjacency, as a concept, has evolved over a number of years in the mind of man and in State practice. The establishment of the territorial sea provided States with a belt of water within which they could exercise sovereign rights. Yet, with its establishment, the practice of governments, typified by British and American practice, continued to recognize that, beyond the territorial sea, nations had limited interests and jurisdiction. In an effort to both codify and limit the extent of these interests, the contiguous zone was established by the 1958 Geneva Conference on the Law of the Sea. Its 12 mile outer limit provided some relief from the restrictions of the territorial sea but did not fulfill the needs of States beyond that limit. There were interests by nations beyond 12 miles and these could not be denied by geographical, geological, or other boundaries. It appeared as if those concerned realized that no satisfactory limitation could be developed. There was only recognition that certain States' interests continued from the outer limits of the territorial sea to some indefinite outer boundary where it terminated. However, there was the realization that these interests were continuous from the shore to this undefined outer boundary. Protected within the confines of the territorial sea, they were merely interests in an adjacent area beyond the limits of sovereignty. In law, it is suggested that adjacency is a notion.

Previous chapters have briefly dealt with certain oceanographic, biological, and geological information that has been either refined or developed since the 1958 Conference. Oceanographically, two important parameters have been suggested as possible outer boundaries of adjacent areas--current velocity and current temperature. Since delimitation in this case would necessitate static requirements in a dynamic environment, a defined area could not be established. The variables would be far too numerous and conflict over limits would be inevitable.

There does appear to be a certain logical basis for a biological concept of adjacency. Areas of biological productivity have been identified in the oceans. The majority of them are near the continents and extend to a certain distance off-shore. Beyond that, productivity is substantially reduced or non-existent. The requirements for this productivity are fairly well understood and depend upon the adjacent lands and rivers to a significant degree for nutrients.

The writer believes that the defined area implied by the concept of adjacency can be met by biological parameters. The vast amount of knowledge gained in the previous decade has expanded knowledge of the continental shelf. There is sufficient evidence to show that it has always been contiguous to the continental land masses. In addition, sediments from the land overlay the shelf. But, most significant, the shelf has supported life as it is known on land in very recent geological history. From time to time, therefore, the shelf has been indistinguishable from the land and its relationship is, and always has been, very close to the present continental land masses. Since the shelf has been

technically defined, it provides an excellent measure for establishing the outer limits of an adjacent area.

Based on the foregoing, the writer holds the opinion that there are two concepts of adjacency. One is biological and exists within certain areas of the sea out to a recognizable limit, bearing a close relationship to the land. The other is geological and is predicated on the very close geological relationship between the continents and the continental shelf.

NOTES

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